Biological Forum – An International Journal **15(9): 592-596(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Mean Performance of Tomato (*Solanum lycopersicum* L.) Genotypes under Chhattisgarh Plains for Fruit Yield, Quality and its components

Mahesh Pamukuntla[1*], Dhananjay Sharma[2], Thriveni Vangapandu[3], Yamini Siwna[1], Archna Banjare[1] and Gulab Das Barman[1]

[1]Ph.D. Scholar, Department of Vegetable Science, IGKV, Raipur (Chhattisgarh), India.
[2]Principle Scientist, Department of Vegetable Science, IGKV, Raipur (Chhattisgarh), India.
[3]Assistant Professor, Department of Horticulture, CUTM, Bhubaneswar (Odisha), India.

(Corresponding author: Mahesh Pamukuntla)*
(Received: 25 June 2023; Revised: 27 July 2023; Accepted: 29 August 2023; Published: 15 September 2023)
(Published by Research Trend)

ABSTRACT: The present investigation was carried out in the field of AICRP on Vegetable Crops at Horticultural Research cum Instructional Farm, Department of Vegetable Science, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during *Rabi* 2020–21 to evaluate the mean performance of tomato genotypes for yield, quality, and its components. The research material consists of ten diverse genotypes/variety of tomato collected from the AICRP on Vegetable Crops, Raipur. All the genotypes were grown in RBD with three replications. Significant differences were observed for all the traits studied, indicating a substantial amount of variation. The experiment results revealed that genotype TODVR-4 exhibited the best for the following characters: plant height (cm), number of primary branches, number of secondary branches, and days to 50% flowering. TODVR-5 showed best for days to first fruit set. TODVR-6 showed the best for Total Soluble Solids (%), TODVR-8 showed the best for stem girth (cm), and TODVR-9 showed the best for days to first flowering, number of fruits per cluster, days to attain marketable maturity, and number of fruits per plant. TOLCV-1 performed best for characters like fruit diameter (cm) and average fruit weight (g), while TOLCV-2 performed best for fruit length (cm) and pericarp thickness (mm). TOLCV-4 performed best for the characters fruit yield per plot (kg), fruit yield per hectare (q), and number of locules per fruit.

Keywords: Genotype, tomato, yield, quality, *Solanum lycopersicum*.

INTRODUCTION

Tomato (*Solanum lycopersicum* L., 2n = 2x = 24) is one of the most important and popular vegetable crops in the world. The tomato is considered a member of the Solanaceae family. Tomato fruit contains 3-4% total sugar, 4-7% total solids, 15–30 mg/100g ascorbic acid, and 20–50 mg/100g fruit weight of lycopene. Sodium 45.8 mg, potassium 114 mg, copper 0.19 mg, sulphur 24 mg, chlorine 38 mg, vitamin A, thiamine 0.07 mg, riboflavin 0.1 mg, nicotinic acid 0.4 mg, vitamin C 31 mg, calcium 20 mg, magnesium 15 mg, oxalic acid 2 mg, phosphorus 36 mg, and iron 1.8 mg are also present in 100g of edible fruit (Saima *et al.*, 2019).

In India, the tomato is sown in an area of 812 thousand hectares with an ample annual production of 20573 thousand MT (Anonymous, 2020), while in Chhattisgarh the area under tomato cultivation is 64.383 thousand hectares with an annual production of 1151.488 thousand MT, mainly grown in Durg, Bemetara, Jashpur, Raipur and Bilaspur (Anonymous, 2021).

It can also be cultivated as sole, inter cropped as well as in vertical cropping system to increase production and productivity per unit area (Panwar *et al.*, 2021). This crop is also more suitable under poly house structure (Singh *et al.*, 2017). The health benefit of tomato makes it a one of the most commercially viable commodity which can be a component of year round vegetable cultivation (Noopur *et al*., 2021) as well as food and nutrition security (Noopur *et al*., 2019).

Tomatoes are universally treated as 'Protective Food' since they are very rich in minerals, vitamins, antioxidants, essential amino acids, sugars, and dietary fibers, which are important ingredients for chutney, pickles, ketchup, soup, juice, puree, etc. (Sekhar *et al.*, 2010). Fresh tomato fruit is in high demand throughout the country all year. Hence, there is a continuous need to strengthen the crop improvement programs in tomatoes and ultimately develop new varieties and hybrids satisfying the present-day needs of farmers and consumers as well. So far, the efforts of many vegetable breeders from both the public and private sectors have resulted in spectacular improvements in yield and quality characteristics.

MATERIAL AND METHODS

The present investigation was carried out in the field of AICRP on Vegetable Crops at Horticultural Research cum Instructional Farm, Department of Horticulture, IGKV, Raipur (C.G.) during *Rabi* 2020. Geographically

the farm is situated between 22˚33′N and to 21˚14′N latitude and 82˚6'E to 81˚38'E longitude, at a height of 289.56 meters above mean sea level. The soil was clay loam with good drainage and adequate water holding capacity. The experiment was laid out in Randomized Block Design (RBD) with three replications. Ten genotypes/ variety were collected from All India Co-ordinated Research Project on Vegetable Crops (AICRP) Raipur, Chhattisgarh.

The observations were recorded on five randomly tagged competitive plants from each genotype. growth parameters like, plant height (cm), number of primary branches, number of secondary branches, stem girth (cm), days to first flowering, days to 50% flowering, days to first fruit set, fruit length (cm), fruit diameter (cm), number of fruits per cluster, average fruit weight, days to attain marketable maturity, number of fruits per plant, fruit yield per plot (kg) and fruit yield per hectare (q). Whereas, qualitative characters like, number of locules per fruit, pericarp thickness (mm) and total soluble solids (%) were recorded. The analysis of variance was calculated as per standard procedure given by Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

The analysis of variance of all the characters studied under the trail indicated that mean sum of squares due to genotypes/varieties were highly significant for all the characters except days to first fruit set. These confirmed the presence of considerable amount of genetic variability among various tomato genotypes. Similar results with respect to this reported by Khan *et al.* (2017); Mahmoud and Khalil (2019); Rojalin *et al.* (2019).

A. Plant Height (cm)

The data of mean performance of tomato genotypes for yield and yield attributing characteristics depicted in Table 1. Analysis of variance revealed significant difference among all the characters it is evident that plant height of genotypes varied from 74.83cm to 148.00cm with a total mean of 110.62 cm. Among the genotypes/variety, TODVR-4 (148.00cm) recorded maximum plant height while minimum plant height (74.83cm) was observedin TOLCV-2.

B. Number of primary branches

The maximum number of primary branches per plant was observed in TODVR-4 (13.73), which was followed by TOLCV-2 (10.90). Whereas, the minimum number of primary branches per plant was observed in TOLCV-6 (3.70). Overall mean of genotypes observed as 8.22 for this trait.

C. Number of secondary branches

The maximum number of secondary branches per plant was observed in TODVR-9 (68.17), which was followed by TODVR-4 (50.37). Whereas, the minimum numberof secondary branches per plant was observed in TOLCV-1 (26.25). Overall mean of genotypes were observed as 38.65 for this trait. The present result getting support from the findings of Shankar *et al.* (2014).

D. Stem girth (cm)

The maximum stem girth was observed in TODVR-8 (4.30cm), which was followed by TODVR-4 (4.09cm). Whereas, the minimum stem girth was observed in TODVR-9 (2.58cm). Overall average of the genotypes were 3.69 (cm) for this trait.

Varietal traits such as plant height, number of primary branches and other physical attributes are regulated and expressed by particular genes. These findings are consistent with those of Jatav *et al.* (2017); Waiba *et al.* (2021) who found a broad variation in plant height and number of primary branches in different tomato varieties.

E. Days to first flowering

The minimum days to 1st flowering was noted in TOLCV-4 (21.88 days) which was followed by TOLCV-6 (22.46 days) and TOLCV-1 (22.98 days). Whereas, the maximum days to 1st flowering was noted in TODVR-5 (30.86 days). Overall average of genotypes 26.58 days for this trait. The variability among tomato genotypes for a certain number of days to flowering has been reported in earlier studies. Khan *et al.* (2017); Mahmoud and Khalil (2019) reported that the period between transplanting and flowering ranged between 24.67–47.66 and 31–45 days.

F. Days to 50% flowering

The minimum days to 50% flowering was noted in TOLCV-2 (34.96 days) which was followed by TOLCV-4 (35.42 days). Whereas, the maximum days to 50% flowering was noted in TODVR-5 (46.09 days). Overall mean of genotypes 41.20 days for this trait. Similar variation in days to 50% flowering, number of flower clusters per plant and number of flowers per cluster was earlier reported by Rojalin *et al.* (2019) in different tomato cultivars.

G. Days to first fruit set

The minimum days to first fruit set were taken by genotype TODVR-6 (56.06 days) and TODVR-9 (56.31 days). Genotypes *viz*., TODVR-5, TOLCV-4 and TODVR-4 took maximum days to first fruit set (81.33, 81.33 & 79.33 respectively). Overall average of genotypes 57.24 days for this trait. These results are similar with the findings of Shradda *et al.* (2022).

H. Fruit length (cm)

The maximum fruit length was recorded in TOLCV-2 (6.52cm) and TOLCV-1 (6.23cm) whereas; the minimum fruit length was recorded in TODVR-4 (3.61cm) and TODVR-9 (3.82cm). Overall average of genotypes 4.82 (cm) for this trait. These results are similar with the findings of Shradda *et al.* (2022).

I. Fruit diameter (cm)

The maximum fruit diameter was observed in TOLCV-1 (5.96cm) and TOLCV-6 (5.75cm). Whereas the minimum fruit diameter was observed in TODVR-9 (3.92cm). Overall average of genotypes 5.15 (cm) recorded for this trait. These results are similar with the findings of Kiran *et al.* (2018).

J. Number of fruits per cluster

The highest number of fruits per cluster was noted in TODVR-9 (10.61) which was followed by TODVR-1 (8.11) whereas, the lowest number of fruits per cluster was noted in TOLCV-4 (5.52). overall mean of genotypes 7.49 recorded for this trait. Significant differences between the examined lines for this character were recorded by Khan *et al*. (2017); Kena *et al*. (2018); Hassan *et al.* (2021).

K. Average fruit weight (g)

The maximum average fruit weight (g) was recorded in TOLCV-1 (96.34g). Whereas, the minimum average fruit weight was noted in TODVR-9 (32.21g). Overall average of genotypes 63.19 (g) observed for this trait. The variation in fruit weight by different cultivars have also been reported by Khan *et al*. (2017); Kena *et al*. (2018); Shah *et al*. (2019); Hassan *et al.* (2021).

L. Days to attain marketable maturity

The maximum days to attain marketable maturity was recorded in TODVR-9 (105.17 days) followed by TOLCV-4 (98.37 days) whereas minimum days to attain marketable maturity was observed in TODVR-5 (79.41 days). Overall average of genotypes 91.38 days observed for this trait. Mahmoud and Khalil (2019) previously reported similar observations.

M. Number of fruits per plant

The maximum number of fruits per plant was noted in TODVR-9 (66.57) and TOLCV-4 (59.96) whereas the lowest number of fruits per plant was noted in TOLCV-1 (22.03). Overall mean of genotypes 41.67 observed for this trait. Dunsin *et al*. (2016); Khan *et al.* (2017); Ochar *et al*. (2019) mentioned similar variations in the number of fruits per plant.

N. Fruit yield per plot (kg)

Fruit yield is the most important complex trait in tomato. The observations recorded on fruit yield per plot (kg) showed significant variation among various genotypes. It ranged from 11.93 to 29.60 kg. Genotype TOLCV-4 recorded highest yield per plot (29.60 kg) which was followed by TOLCV-2 (26.34 kg) and TODVR-4 (20.74 kg). Minimum fruit yield per plot (kg) was recorded in TODVR-9 (11.93 kg). The overall average of genotypes 17.59 observed for this trait. The present findings are in accordance with the results of Basavaraj *et al.* (2016); Sujeetkumar and Ramanjini Gowda (2016).

O. Fruit yield per hectare (q)

The highest fruit yield per hectare (q) was noted in TOLCV-4 (493.30 q) which was followed TOLCV-2 (438.98 q). Whereas, the lowest fruit yield per hectare (q) was noted in TODVR-9 (198.89 q). The overall mean of genotypes 292.83 (q/ha) for this traits.

Variation in yield parameters *viz*., number of fruits per cluster, number of fruits per plant, average fruit weight and fruit yield per plant was might be due to genetic makeup of the plant. Such kind of genetic differences for marketable fruit yield and other plant characters in different tomato hybrids had also been reported by Bharathkumar *et al*. (2017); Shukla *et al.* (2021).

P. Total Soluble Solids (%)

Quality parameters in tomato emphasizes on attributes for fresh market and processing. The tomatoes developed for fresh market and processing should have distinct quality characteristics. For processing and fresh market consumption, fruits should be well colored with acceptable flavor.

From the present investigation, the maximum total soluble solids (4.56°B) were recorded in TODVR-4, followed by TODVR-6 (4.53°B). Whereas, the lowest total soluble solid percent was noted in TOLCV-6 (3.27°B) followed by TOLCV-1 (3.48°B). The overall average of genotypes for this trait recorded as 3.95°B. Earlier, Sharma *et al*. (1996) reported the TSS (°B) range of 4.0-6.0, °B respectively. Parmar *et al*. (2018); Shah *et al*. (2019); Hassan *et al.* (2021) recorded similar results on the significant differences for this trait.

Table 1: Mean performance of tomato (*Solanum lycopersicum* L.) genotypes for fruit yield, quality and its components.

Genotypes	Characters																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TODVR-1	82.17	9.09	40.60	3.32	25.55	40.41	58.15	4.33	4.87	8.11	48.54	86.66	26.18	14.04	233.99	3.78	5.20	2.19
TODVR-4	148.00	13.73	50.37	4.09	30.15	45.56	58.16	3.61	4.63	6.51	36.98	84.40	45.67	20.74	345.34	4.56	4.20	5.50
TODVR-5	115.67	6.38	30.54	3.96	30.86	46.09	58.56	5.21	5.61	7.41	87.67	79.41	51.27	14.30	238.25	4.47	7.20	4.23
TODVR-6	105.27	5.14	26.87	3.50	29.46	44.67	56.06	4.33	4.31	7.41	39.98	86.50	43.50	12.23	203.78	4.53	4.50	3.15
TODVR-8	94.67	8.56	46.33	4.30	28.79	44.55	56.57	4.44	5.33	7.17	64.71	95.14	43.52	16.61	274.16	3.86	7.30	3.12
TODVR-9	117.07	10.55	68.17	2.58	29.83	44.90	56.31	3.82	3.92	10.61	32.21	105.17	66.57	11.93	198.89	3.55	4.46	3.18
TOLCV-1	127.33	5.25	26.25	3.79	22.98	38.04	57.26	6.23	5.96	7.47	96.34	87.35	22.03	15.30	255.00	3.48	7.46	4.21
TOLCV-2	74.83	10.90	38.85	4.04	23.80	34.96	56.48	6.52	5.44	8.07	91.89	95.01	34.53	26.34	438.98	3.91	8.70	3.25
TOLCV-4	118.83	8.92	30.36	3.61	21.88	35.42	58.25	4.53	5.63	5.52	66.62	98.37	59.96	29.60	493.30	4.10	4.20	5.54
TOLCV-6	122.33	3.70	28.11	3.66	22.46	37.40	56.64	5.19	5.75	6.58	66.95	95.78	23.47	14.79	246.57	3.27	8.20	4.28
Mean (x)	**110.62**	**8.22**	**38.65**	**3.69**	**26.58**	**41.20**	**57.24**	**4.82**	**5.15**	**7.49**	**63.19**	**91.38**	**41.67**	**17.59**	**292.83**	**3.95**	**6.14**	**3.86**
SE±m	**2.28**	**0.57**	**1.54**	**0.24**	**0.73**	**0.46**	**0.57**	**0.08**	**0.13**	**0.43**	**0.62**	**0.89**	**0.79**	**0.13**	**2.04**	**0.03**	**0.01**	**0.04**
CD at 5%	**6.76**	**1.7**	**4.57**	**0.72**	**2.17**	**1.37**	**1.69**	**0.25**	**0.38**	**1.29**	**1.84**	**2.63**	**2.34**	**0.38**	**6.07**	**0.09**	**0.02**	**0.11**
CV	**3.56**	**12.08**	**6.89**	**11.36**	**4.76**	**1.94**	**1.72**	**2.98**	**4.27**	**10.02**	**1.69**	**1.68**	**3.27**	**1.28**	**1.21**	**1.35**	**2.07**	**1.65**

1. Plant Height (cm) ; 2. Number of primary branches; 3. Number of secondary branches; 4. Stem girth (cm); 5. Days to first flowering; 6. Days to 50% flowering; 7. Days to first fruit set; 8. Fruit length (cm); 9.Fruit Diameter (cm); 10. Number of fruits/cluster; 11. Average fruit weight (g); 12. Days to attain marketable maturity; 13. Number of fruits/plant; 14. Fruit yield/plot (kg); 15. Fruit yield/ha (q); 16. Total soluble solids (%); 17. Pericarp thickness (mm); 18. Number of locules/fruit

Q. Pericarp thickness (mm)

The maximum pericarp thickness was observed in TOLCV-2 (8.70mm) followed by TOLCV-6 (8.20 mm). Genotype TODVR-4 (4.20 mm) possessed minimum pericarp thickness. The overall average of genotypes 6.14 (mm) for this trait. Several researchers, such as Dar *et al.* (2012), Khan *et al.* (2017); Mahmoud and Khalil (2019); confirmed these results. Kumari and Sharma (2011) reported that genotypes with thicker pericarp are better to withstand long distance transportation and remain firm for a longer period, when compared to thinly fleshed tomatoes.

R. Number of locules per fruit

Genotype TOLCV-4 (5.54) recorded maximum numbers of locules per fruit followed by TODVR-4 (5.50) whereas, minimum numbers of locules per fruit was observed in TODVR-1 (2.19). The overall average of genotypes 3.86 for this trait. Similar results were recorded by Dar *et al.* (2012), Mahmoud and Khalil (2019) who observed that the number of locules per fruit in the selected genotypes ranged between 2–3.67 and 2.03–4, respectively.

CONCLUSIONS

By considering the mean performance, a wide range of variation was observed among ten genotypes of tomato, evaluated for eighteen characters. From above study we concluded that traits like fruit yield per hectare, fruit yield per plot, number of fruits per plant, average fruit weight, number of fruits per cluster, number of locules per fruit and quality characters etc. are important traits for which selection based on best mean performance could be very effective for cultivation under Chhattisgarh plains condition. The improvement of these characters and the best performing genotypes for fruit yield per hectare and quality are TOLCV-4, TOLCV-2, TODVR-4 and TODVR-8 can be effective and which can also be retained in the future generations.

FUTURE SCOPE

The promising genotypes/varieties are identified in this study can be cultivated under Chhattisgarh plains and can be selected as parents in hybridization programme for exploitation of higher yield and quality characteristics in subsequent generations of tomatoes.

Acknowledgement. This paper forms a part of the Ph.D. thesis of the first author to be submitted IGKV, Raipur. The authors are thankful to Indira Gandhi Krishi Vishwavidyalaya, Raipur for support and providing the experimental equipment and the field site.

Conflict of Interest. None.

REFERENCES

Anonymous (2021). Area, production of Horticultural crops 2020-21 by Horticultural Statistics Division, DAC&FW-New Delhi. 01.

Basavaraj, L. B., Vilas, D. G., Shivappa, M. K., Vijayakumar, D. R., Nagesh, G. C. and Reshmika, P. K. (2016). Combining ability analysis for yield and quality traits in tomato (*Solanum lycopersicum* L.). *Green Farming, 7*(1), 26-30.

Bharathkumar M. V., Sadashiva A. T. and Jatav P. K. (2017). Performance of a Set of Tomato Parental Lines and their Hybrids for Quality and Yield under conditions of Bengaluru, India. *International Journal of Current Microbiology Applied Science, 6*(5), 786-793.

Dar, R. A., Sharma, J. P., Nabi, A. and Chopra, S. (2012). Germplasm evaluation for yield and fruit quality traits in tomato (*Solanum lycopersicon* L.). *African Journal of Agricultural Research, 7*, 6143- 6149.

Dunsin, O., Agbaje, G., Aboyeji, C. M. and Gbadamosi, A. (2016). Comparison of growth, yield and fruit quality performance of tomatoes varieties under controlled environment condition of the Southern Guinea Savannah. *American-Eurasian Journal of Agricultural and Environmental Sciences, 16*, 1662-1665.

Hassan, Z., Ul-Allah, S., Khan, A. A., Shahzad, U., Khurshid, M., Bakhsh, A., Amin, H., Jahan, M. S., Rehim, A. and Manzoor, Z. (2021). Phenotypic characterization of exotic tomato germplasm: An excellent breeding resource. *PLOSONE, 16*, e0253557.

Jatav, P. K., Panghal, V. P. S., Duhan, D., Chikkeri, S. S., Bharathkumar, M. V. and Kumar, N. M. (2017). Performance of elite genotypes of tomato (*Solanum lycopersicum* Mill.) for yield and quality traits under hisar conditions of Haryana. *Annals of Horticulture, 10*(1), 45-51.

Kena, K., Tegenu, Z., Debela, A. and Raga, A. 2018. Adaptability and performance evaluation of recently released tomato (*Lycopersicon esculentum* Mill.) varieties at West and Kellem Wollega Zones under supplementary irrigation. *International Journal of Agricultural Scienceand Research, 7*, 28-32.

Khan, I., Hussain, I., Ahmed, M., Khan, S. M., Khan, A., Naveed, K., Ali, S., Hussain, I. and Sajid, M. (2017). Screening of different exotic lines of tomato (*Lycopersicon esculentum* L.) under the agro climatic condition of Haripur. *Pure and Applied Biology, 6*, 1251-1259.

Kiran, K., Sharma, D., Singh, J., Sharma, T. K., Vivek, K. K. and Minz, R. R. (2018). Per Se Performance of Tomato (*Solanum lycopersicum* L.) Genotypes for Yield and Quality Traits. *Trends in Biosciences 11*(8), 1871-1874.

Kumari, S. and Sharma, M. K. (2011). Exploitation of heterosis for yield and its contributing traits in tomato (*Solanum lycopersicum* L.). *Int. J. Farm Sci., 1*(2), 45-50.

Mahmoud, I. M. and Khalil, M. R. 2019. Breeding for developing new indeterminate lines of tomato (*Solanum lycopersicum* L.) by selection. *Menoufia Journal of Plant Production, 4*, 233-245.

Noopur, K., Ansari, M. A. and Panwar, A. S. (2021). Self-reliant in year round vegetable production and consumption through Kitchen garden model in Indo Gangetic Plains. *Indian Journal of Agricultural Sciences, 91*(12), 1773-1777.

Noopur, K., Jawaharlal, M., Praneetha, S., Kashyap, P. and Somasundram, E. (2019). Genetic variability and character association studies in French bean (*Phaseolus vulgaris*) in Nilgiri hills of Tamil Nadu. *Indian Journal of Agricultural Sciences, 89*(12), 2009-13.

Ochar, K., Blay, E. T., Asante, I. K., Nkansah, G. O. (2019). Evaluation of selected tomato (*Solanum lycopersicum* L.) cultivars in Ghana for superior fruit yield and yield component traits. *Journal of Horticulture, 6*.

Panse, V. G. and Sukhatme, P. V. (1978). Statistical methods for agricultural workers. IV Edn. ICAR, New Delhi.

Panwar, A. S., Ravisankar, N., Singh, R., Prusty, A. K.,

Shamim, M. and Ansari, M. A. (2021). Potential integrated farming system modules for diverse ecosystems of India. Indian Journal of Agronomy 66 (5th IAC Special issue), S15-S32.

Parmar, D. K., Thakur, D. R., Jamwal, R. S., singh, G. (2018). Evaluation of tomato cultivars for yield, profitand quality performance in an organic management system in North Western Himalayas, India. *International Journal of Current Microbiology and Applied Sciences, 7*, 498-506.

Rojalin, P., Alok, Nandi, Sahu, G. S. and Tripathy, P. (2019). Evaluation of Tomato (*Solanum lycopersicum* L.) Hybrids during Rainy Season in Coastal Plain of Odisha, India. I*nternational Journal of Current Microbiology and Applied Science, 8*(7), 2410-2417.

Saima, S., Malik, A., Zargar, M. Y., Showkat, M., Shakeel, A. M., Zahoor, A. B., Zaffar, M. D., Shayan and Ayman (2019). Impact of microbial inoculants on growth and yield of tomato (*Solanum lycopersicon* L.) under temperate conditions. *Journal of Pharmacognosy and Phytochemistry, 8*(1), 1261-1264.

Sekhar, L., Prakash, B. G., Salimath, P. M., Hiremath, C. P., Sridevi, O. and Patil, A. A. (2010). Implications of heterosis and combining ability among productive single cross hybrids in tomato. Electro. *J. Plant Breeding, 1*(4), 706-711.

Shah, S. M., Ara, N., Ullah, A., Ali, S., Shah, S.H.A., Khan, I., Aamir, B. and Khan, G. (2019). Evaluation of physico-chemical characterization of tomato (*Lycopersicon esculentum* Mill.) germplasm. *International Journal of Biosciences, 14*, 411-416.

Shankar, A., R. V. S. K. Reddy., Sujatha, M. and Pratap, M. (2014). Development of superior F hybrids for commercial exploitation in tomato (*Solanum lycopersicon* L). *Int. J. Farm Sci., 4*(2), 58-69.

Sharma, S., Mahajan, R. and Bajaj, K. L. (1996). Biochemical evaluation of some tomato varieties. *Veg. Sci., 23*(1), 42-47.

Shukla, S., Prasad, V. M., Bahadur, V. and Topno, S. (2021). Comparative studies of tomato and cherry tomatoe's different varieties under polyhouse condition. *International Journal of Advances in Agricultural Science and Technology, 8*(8), 201-209.

Singh, A.K., Sabir, N. and Noopur, K. (2017). Horticulture based plasticulture cum covered cultivation for livelihood security. *Indian Horticulture, 62*(5), 68-74.

Sujeet, K. and Ramanjini Gowda, P. H. (2016). Estimation of heterosis and combining ability in tomato for fruit shelf life and yield component traits using line × tester method. *Int. J. Agri.and Envi. Res., 2*(3), 445-470.

Waiba, K. M., Sharma, P., Kumar, K. I. and Chauhan, S. (2021). Studies of genetic variability of tomato (*Solanum lycopersicum* L.) hybrids under protected environment. *International Journal of Bio-resource and Stress Management, 12(*4), 264-270.

How to cite this article: Mahesh Pamukuntla, Dhananjay Sharma, Thriveni Vangapandu, Yamini Siwna, Archna Banjare and Gulab Das Barman (2023). Mean Performance of Tomato (*Solanum lycopersicum* L.) Genotypes under Chhattisgarh Plains for Fruit Yield, Quality and its components. *Biological Forum – An International Journal, 15*(9): 592-596.